Original Article

Preparedness among Medical Rehabilitation Professionals for Deployment to Future Disaster Settings

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Abstract

Objective: To assess the preparedness among medical rehabilitation professionals for deployment to disaster settings and to establish a rehabilitation professional database for disaster training and deployment under the auspices of the International Society of Physical and Rehabilitation Medicine (ISPRM). **Methods:** A survey tool for preparedness for deployment to disaster settings was developed by the authors following approval from the Rehabilitation Medicine Society of Australia and New Zealand (RMSANZ) and ISPRM. The link to the online survey was distributed by email to members through the RMSANZ and Central Office of ISPRM. Participants were registered rehabilitation professionals who were members of the RMSANZ and/or ISPRM. The survey was voluntary. **Results:** Of the 76 respondents, the majority (94%) were rehabilitation physicians, 72% had >10 years of experience in rehabilitation medicine, 63% expressed an interest in future deployment, and only 24% had some disaster management training in the past. Almost all who expressed an interest in deployment wanted to receive any relevant disaster management training and education before deployment; others were interested in potential opportunities and expectations in disaster management, mitigation, communication, team structure, and telemedicine utilization. **Conclusion:** Surveying a larger cohort of rehabilitation professionals and documentation of context-specific rehabilitation skills relevant to disaster settings are needed. Establishment of a database of rehabilitation professionals, willing to be deployed, should be considered to assist with the integration of the rehabilitation workforce within the World Health Organization Emergency Medical Team Initiative.

Keywords: Deployment, disaster, rehabilitation professionals, training

Introduction

A disaster is "a serious disruption of functioning of a community or a society causing widespread human, material, economic or environmental losses, which exceeds its ability to cope using its own resources," as defined by the United Nations Office for Disaster Risk Reduction.[1] Natural and/or man-made disasters contribute to escalation in worldwide prevalence of disability.[2,3] Globally, based on the 2010 global population estimates, approximately one billion people have disabilities.[3] Of these, 110–190 million people have significant difficulties, such as inability to ambulate, perform personal care, communicate, and/or participate in social activities or employment.[3] The annual human death toll from natural disasters is an estimated 100,000 deaths, whereas annual economic losses have increased 10-fold in the past four decades, to more than $100 billion. As expected, most disasters occur in developing nations with long-term negative consequences on their economy and development.[4]

Disasters commonly result in long-term physical disability secondary to traumatic brain injury, spinal cord injury, limb amputation, peripheral nerve injury/crush injury, or musculoskeletal injury.[1,5-7] Psychological problems such as posttraumatic stress disorder may affect an individual's functional capacity and interfere with quality of life or societal participation.[8,9] With increasing frequency of disasters worldwide, there is a greater emphasis and need for

Access this article online

Quick Response Code:

Website: www.jisprm.org

DOI: 10.4103/jisprm.jisprm_2_20

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How to cite this article: Lee SY, Amatya B, Galea MP, Khan F. Preparedness among medical rehabilitation professionals for deployment to future disaster settings. J Int Soc Phys Rehabil Med 2020;3:5-10.

Submitted: 10-Feb-2020; **Accepted:** 10-Feb-2020; **Published:** 08-May-2020

rehabilitation medicine in disaster management.[4] The World Health Organization (WHO) defines rehabilitation as "a set of interventions designed to optimise functioning and reduce disability in individuals with health conditions (disease-acute or chronic, disorder, injury or trauma) in interaction with their environment."[10] The WHO has undertaken different initiatives, including emergency response frameworks, coordination mechanisms, emergency medical team (EMT) accreditation process, and integrating medical rehabilitation professionals into EMTs. It acknowledges the importance of rehabilitation-inclusive disaster management plans from the acute phase to long-term care in the community and collaboration with local health services for a sustainable and comprehensive continuum of care.[11,12] Health research literature on disaster management addresses the traditional disaster cycle (preparedness, response, recovery, and mitigation phases) and emphasizes the importance of rehabilitation in each step of this cycle.[5,13]

Considering that local health services can be overwhelmed in large-scale disasters, it is not surprising that limited workforce capacity, particularly the availability of medical rehabilitation professionals can compromise disaster management. The role of a rehabilitation professional is crucial in any disaster setting and needs to be integrated within disaster management. It is a complex role and responsibility and requires a multi-faceted mix of skills and training.[4] The skills and competencies of rehabilitation professionals are pivotal to the effective delivery of care and the empowerment of consumers within the community.[14] Unfortunately, rehabilitation services are not considered a high priority compared with acute medical services in disaster events. This is true not only in developing countries, where rehabilitation services are underdeveloped, but also in developed countries such as Australia, despite a strong medical rehabilitation workforce.[4]

Although there is recognition of limited rehabilitation skilled workforce in disaster settings, to date, there has been no assessment of preparedness and/or willingness of medical rehabilitation professionals for deployment to future disasters. Further, to our knowledge, there is no registry or database of qualified medical rehabilitation professionals, capable and/or willing to be deployed or trained in rehabilitation aspects of disaster medicine. In previous disasters, many EMTs did not include rehabilitation personnel (in particular rehabilitation physicians), and the rehabilitation specialized teams/cells that were deployed, worked individually and/or in "silos."[7] Specific data are needed to assess the skill base of the rehabilitation workforce, and its capacity to deliver effective rehabilitation care in disaster settings to ensure services and skills meet demand. Besides, documentation of context-specific rehabilitation skills and capacity would assist in estimating the unmet need for service provision for disaster survivors, as well as for planning, setting priorities for education and training, mobilizing resources and advocacy to government.

The objective of this project was to pilot a survey tool to gain insight from rehabilitation professionals who are members of the Rehabilitation Medicine Society of Australia and New Zealand (RMSANZ) and International Society of Physical and Rehabilitation Medicine (ISPRM). The information obtained can help establish an ISPRM database of rehabilitation professionals who are willing and prepared for deployment to disaster settings. This process could run parallel to the WHO-EMT initiative, so that if requested, the ISPRM could assist WHO in suggesting regional trained personnel for deployment.

Methods

Design

An exploratory pilot study using an online survey.

Participants and settings

This study was conducted under the auspices of the RMSANZ and ISPRM. Written approvals were obtained from the Presidential Cabinets of the RMSANZ and ISPRM before the commencement. A letter of endorsement was obtained from the Human Research Ethics Committee of Melbourne Health. The surveys were distributed by RMSANZ and ISPRM through E-mail, using the Survey Monkey Tool online survey software (surveymonkey.com). Participants were registered medical rehabilitation professionals and other health-care professionals who were members of either one or both societies. All participant demographics and other information were already registered in RMSANZ and ISPRM databases. The completion of this survey was voluntary. Hence, completing and returning the survey implied consent.

Data collection

As no previous survey instruments were available to obtain the required information, a situational analysis survey tool specific for rehabilitation [Appendix 1] was developed by the authors, with input from members of the Disaster Rehabilitation Special Interest Group (DR-SIG) of the RMSANZ and the Disaster Rehabilitation Committee (DRC) of the ISPRM (all authors are members of the DR-SIG and DRC). This pilot survey tool was designed to provide a cross-sectional assessment of preparedness and willingness among medical rehabilitation professionals for deployment to future disaster settings and to assess their needs for training and education for the deployment to disaster settings (if needed). The content of this survey included questions about identity, demographics, contact details, geographic regions, professional groups (e.g. medical rehabilitation specialist or other health-care professionals), years of training in rehabilitation, past experience and interest in deployment to future disaster settings, and presence of medical condition or disability that requires special consideration. An open-ended section of the questionnaire provided respondents with an opportunity to supply information in regard to the preferred type of training and/or education before deployment. Participants were also asked if they are willing to share their data with the RMSANZ and ISPRM in future.

Data analysis

All participants identification and information remained confidential. The original and identifiable data were owned by the RMSANZ-DR SIG and ISPRM-DRC. Deidentified data were used by authors for the purpose of this publication. The data were secured and filed in the Department of Rehabilitation Medicine at Royal Melbourne Hospital, Australia, and opened only at the time of data entry into a special password-protected study database (by an independent data entry officer). A primary database was created, which included information obtained from participants. Only the authors had access to this database.

All data were collated using the content analytical technique. Three authors (Su Yi Lee, Bhasker Amatya, and Fary Khan) scrutinized each response and coded the information using a line-by-line process. The deidentified data were entered twice to avoid errors on data entry. Microsoft Excel was used for data entry and analyses. Descriptive analyses were used to make comparisons by geographic regions, professional groups (e.g. rehabilitation physician, or other health-care professionals), years of training in rehabilitation, past experience, and interest in deployment to future disaster settings.

Results

Of the 5309 members of the RMSANZ and ISPRM approached for the study, only a total of 76 participants completed the survey (1.4%). The majority of participants were from Australia (n = 44; 57.9%). Other participants were from New Zealand (n = 5; 6.6%), United States of America (n = 5; 6.6%), Belgium (n = 2; 2.6%), Malaysia (n = 2; 2.6%), and other countries as listed in Figure 1. The majority of respondents were rehabilitation physicians (n = 71; 94%), while other participants included allied health professionals, e.g. physiotherapist (n = 4; 5%) and others, e.g. researcher (n = 1; 1%). Most participants (72%) worked in government-funded public health institutions, 15% in the private sector, 5% in both public and private sectors, and 8% in other institutions such as community organizations.

Qualifications and experience

In regard to experience, 72% of survey participants had ≥10 years of experience in their rehabilitation specialty. Level of education varied, with 54% completing a degree in their respective profession, 24% master's degree, and 22% doctorate.

Deployment to disaster settings

Experience and interest

Three-quarters (75%) of the participants had previously been deployed to a disaster setting, and 63% expressed interest in future deployment to disaster settings. For "readiness" notice before deployment, 53% of participants required ≥7 days' notice, 24% needed 4–7 days, and 23% required 0–3 days' notice before deployment.

Disaster management training

Training and education are important before deployment to disaster settings. Less than a quarter (24%) of survey participants had received disaster management training in the past. Types of training included emergency medicine, disaster preparedness and response, advanced life support skills, trauma management skills, etc. The majority of participants preferred to receive training and education before deployment. Most felt that any relevant training related to disaster management would be useful. Box 1 shows the types of training and education requested by participants.

Special requirements and medical needs

Sixty-four (86%) respondents reported no need for special requirements (e.g. physical limitations, vaccination) or personal medical needs (e.g. medications) during deployment to disaster settings. Fourteen percent of respondents had special needs, which were related to physical impairments, health-related limitations (e.g. poor endurance, cardiovascular limitations), and special dietary requirements.

Discussion

This pilot study used a structured survey tool to gain insight from rehabilitation professionals, mainly rehabilitation physicians, regarding their preparedness and willingness for future deployment to disaster settings. Although there was a very low response rate, the survey provided valuable information on the years of experience of rehabilitation professionals in their respective profession, level of education, experience and interest in deployment to disaster settings, required readiness notice,

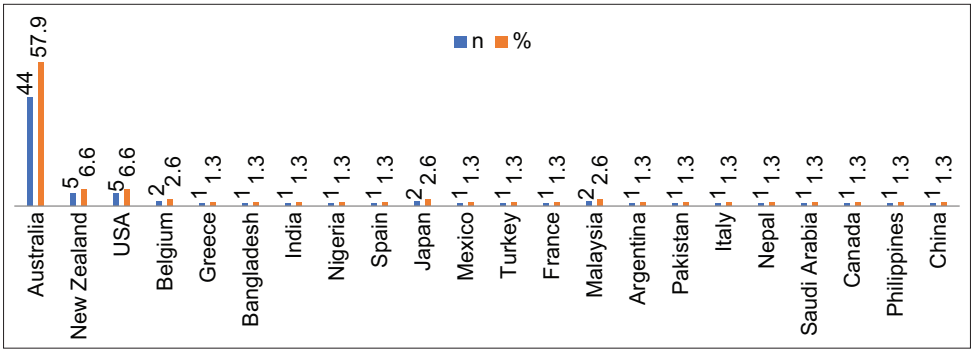

Figure 1: Number of participants from different countries (n = 76) (n = number; % = percentage)

Box 1: Preferred types of training before deployment reported by rehabilitation professionals

1. Any relevant disaster management training and education available to health-care professionals, including educational workshops, online modules, and telemedicine
2. Disaster response and management plan (including short and long-term rehabilitation plans)
3. Training on disaster preparedness and mitigation, including safety of victims during disasters
4. Multitrauma, TBI, and limb amputation management in a setting with limited resources and funding
5. Practical training and education focusing on victims of natural disasters (e.g., earthquake, floods, and landslides)
6. Potential opportunities and expectations in disaster management
7. Communication and handover skills, overview of reporting system, and technological logistics handling
8. Knowledge on teamwork/structure and role of a rehabilitation physician
9. Refresher course on basic and advanced life support skills, basic surgical techniques, triage of disaster-related injuries, and management of infectious disease
10. Sharing experience with disaster management experts or rehabilitation professionals who had previously been in a disaster field
11. Health, food security, and safety requirements, including postdisaster de-briefing for medical teams
12. Review and update of minimum standards of rehabilitation medical teams in disaster settings
13. Leadership skills to lead a team in disasters

TBI: Traumatic brain injury

previous disaster management training, preferred types of training and education before deployment, and special requirements/medical needs, including vaccination status. The tool also serves as an efficient way of assessing training and education needs among rehabilitation professionals in the delivery of rehabilitation care in disaster settings. Despite the distribution of the surveys to all members of RMSANZ and ISPRM, it was voluntary, and the low response rate of only 1.4% may be due to the lack of interest in disaster management or future deployment to disaster settings among rehabilitation professionals. Most of the survey participants were from Australia (57.9%), which is located in a region known for natural disasters. While 63% of participants expressed interest in future deployment to disaster settings, only 24% had already received some form of disaster management training in the past. Understanding the participants' preferred training and education before deployment is important for future disaster preparedness planning.

It is recognized that strengthening and building rehabilitation capacity through education and training are important in expanding a skilled rehabilitation workforce, for service provision, governance, and awareness of rehabilitation.[15] In response to sudden-onset disasters, the ISPRM-DRC can play a crucial role in organizing, managing, and coordinating both national and international rehabilitation teams (EMTs or specialized rehabilitation cells), in liaison with the WHO, to ensure a rapid, professional, and coordinated response.[16] Information obtained from this study could form the core of a database of rehabilitation professionals who are willing and prepared to undergo training and deployment if requested by the WHO and could be either embedded in acute EMTs or deploy as independent specialized cells on request. However, it is important to consider that visa regulations might differ for health-care professionals from different countries; therefore, it might present as a barrier during disaster response with difficulty obtaining visa approval in such short notice. Hence, this signifies the leadership role of the ISPRM and DRC in future disasters for the management of logistics of the EMT.[16]

In addition, the database may assist the ISPRM (in coordination with WHO EMT) to ensure that all rehabilitation physicians registered in the database comply with the accreditation process and requirements before deployment.[16] The ISPRM-DRC could facilitate and coordinate regional disaster management training and trauma simulation programs, host workshops, symposia, online education modules, and special sessions in national and international scientific meetings. In addition, the committee could develop evidence-based clinical practice guidelines for disaster-related injuries, as well as standardized measurement tools for data collection in disaster settings.[16] Recent capacity building in health-related rehabilitation services for health emergency responses reinforced strengthening rehabilitation capacity in health systems, with competencies and contributions to primary care, as priorities.[17]

Study limitations

The total number of participants ($n = 76$) in this study represents only a small proportion of rehabilitation professionals across the world. However, it provides an indication of the level of interest in disaster rehabilitation worldwide and provides a baseline for strategies to promote this field within the profession so that it can be integrated within EMTs. The survey was designed by the authors and was not validated before use. However, the authors are experienced rehabilitation professionals and members of the DR-SIG of the RMSANZ and DRC of the ISPRM. The responses to the survey may be used as a basis for refining the tool before its being used again in future. No specific hypotheses were tested, as the purpose was to obtain information. Finally, most participants were from Australia, this is not surprising since the Asia-Pacific region remains the hotspot for disasters. The uneven geographical distribution of rehabilitation respondents may have resulted in missed views, which may also limit the generalizability and validity of findings. A purposeful random sampling method would have been ideal to minimize selection bias; however, this was beyond the authors' authority and the scope of this pilot study. Further research should include a larger cohort of rehabilitation professionals from a wide range of geographical locations using random or other sampling methods that can represent the general views of rehabilitation professionals globally.

Conclusion

This study uses a survey to gather information on the preparedness and willingness of medical rehabilitation

professionals for deployment to future disasters. It assessed the capacity for training and education needs of rehabilitation professionals for mobilizing resources in disaster settings, planning appropriate care delivery, and advocacy. The establishment of an ISPRM database of trained deployable rehabilitation professionals could assist in the integration of rehabilitation workforce within the WHO-EMT initiative. Further studies, with larger cohort of rehabilitation professionals, documentation of context-specific rehabilitation skills/capacity for estimating unmet needs disasters should be a priority.

Acknowledgment

We thank the Disaster Rehabilitation Committee of the International Society of Physical and Rehabilitation Medicine and the Disaster Rehabilitation Special Interest Group of the Rehabilitation Medicine Society of Australia and New Zealand for their support. The views expressed in this article are solely those of the authors and not of the above-mentioned committees.

Financial support and sponsorship

This study was conducted by the Department of Rehabilitation Medicine, Royal Melbourne Hospital, Australia.

Conflicts of interest

There are no conflicts of interest.

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Appendix1: (Authors' information removed)

Preparedness for Rehabilitation Staff Deployment Questionnaire

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Dear Colleague,

Thank you for participating in this survey. The aim of this survey is to understand your willingness and preparedness for deployment to future disasters to assist and provide rehabilitation needs of disaster victims.

Your input and suggestions will help us to create a database of rehabilitation personnel for deployment, and capacity for training/education of rehabilitation workforce in disaster and austere settings.

Thank you for your time and contribution.

Preparedness for Rehabilitation Staff Deployment Questionnaire

Name	
Gender	□ Male □ Female
Age	_____ years
Country	
Job title	
Organisation	
E-mail address	
Telephone	Work: Mobile:
Other contact details	
Any other relevant information (training, education, etc.)	
Please indicate your profession	
Highest level of Education	□ Diploma □ Degree □ Masters □ Doctorate □ Other_____
Years of experience	_____ years
Do you have current registration with the Health Practitioner Regulation Agency in your country?	□ Yes □ No
Where do you mostly work in?	□ Public institution □ Private institution □ Community organisation □ Other_____
Do you have any experience in deployment to disaster settings?	□ Yes □ No If yes: Year: _____ Country:_____
Are you interested in deployment to disaster settings?	□ Yes □ No
How long notice is needed for you to be deployed to future disasters?	□ Ready at any time □ <3 days □ 3-7 days □ >7 days
Have you had any training related to disaster management and preparedness?	□ Yes □ No If yes: Year:_____ Country: _____ Course title:_____
What kind of disaster management and preparedness training/education would you like to have?	
Do you have special medical needs or physical impairments that require consideration?	□ Yes □ No If yes, please specify:_____
Are your vaccinations up-to-date?	□ Yes □ No
Do you provide consent for the Rehabilitation Medicine Society of Australia and New Zealand or International Society of Physical and Rehabilitation Medicine to access the information above?	□ Yes □ No

Signature: _____ Date: DD/MM/YYYY

Please e-mail, fax or post to:

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Thank you for taking your time in completing this survey